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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/673,992	01/16/2001	Hugh Patrick Craig	1118-5-PCT/U	9190

137 7590 06/04/2004

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EXAMINER	
CIRIC, LJILJANA V	

ART UNIT	PAPER NUMBER
3753	14

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/673,992	Applicant(s) CRAIG ET AL.
	Examiner Ljiljana (Lil) V. Ciric LVC	Art Unit 3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 3 February 2003 and on 21 April 2003.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-45 is/are pending in the application.

4a) Of the above claim(s) none is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-45 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. 13 .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: Attachment A.

DETAILED ACTION

Response to Amendment

1. This Office action is in response to the amendments and arguments filed on February 3, 2003 and to the response filed on April 21, 2003.

2. Claims 1 through 45 remain in the application, of which claims 1 through 42 are as amended (either directly or indirectly) and of which claims 43 through 45 are new.

Response to Arguments

3. Applicant's arguments filed on February 3, 2003 have been fully considered but they are not persuasive. For example, claim 36 has been amended to eliminate recitation of a limitation not supported by the originally filed specification, but, as noted in greater detail below, the amendment merely substituted the limitation "thermally curable when the material of the solder bump is molten" with the equivalent (and still unsupported) "at thermally curable at temperatures above the melting point of solder of the solder bump". Also, applicant has noted that claims 1 through 9 and 36 through 38 have been amended to obviate the rejection thereof under 35 U.S.C. 112, second paragraph, as cited in the previous Office action, yet the amendment filed on February 3, 2003 failed to resolve the indefiniteness problems in the claims as noted in greater detail below.

Oath/Declaration

4. This application presents a claim for subject matter not originally claimed or embraced in the statement of the invention. The claims as amended recite the inventive thermally curable adhesive composition as more specifically "consisting essentially of" the various elements, which limiting language was not embraced in the original statement of the invention. A supplemental oath or declaration is required under 37 CFR 1.67. The new oath or declaration must properly identify the application of

which it is to form a part, preferably by application number and filing date in the body of the oath or declaration. See MPEP §§ 602.01 and 602.02.

Specification

5. Receipt and entry of the new abstract filed on February 3, 2003 is hereby acknowledged.

6. The new abstract of the disclosure is objected to because it contains idiomatic and grammatical informalities, is written in run-on fashion, and does not concisely summarize the inventive composition which is claimed. Furthermore, it does not avoid phrases which may be implied, i.e., "Use is made..". Correction is required. See MPEP § 608.01(b).

7. The disclosure is objected to because of the following informalities: portions of the specification [page 3, line 32; and, page 4, line 33] are written using terminology normally reserved for claims (i.e., "comprising").

Appropriate correction is required.

8. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
(e) BACKGROUND OF THE INVENTION.
(1) Field of the Invention.

(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(f) BRIEF SUMMARY OF THE INVENTION.

(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

(h) DETAILED DESCRIPTION OF THE INVENTION.

(i) CLAIM OR CLAIMS (commencing on a separate sheet).

(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Content of Specification

(a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data shet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.

(b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.

(c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.

(d) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

Or alternatively, Reference to a "Microfiche Appendix": See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.

(e) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:

(1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

(2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."

(f) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(g) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.

(h) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

(i) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).

(j) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

(k) Sequence Listing, See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

Claim Objections

9. Claim 41 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 41 contains no limitations not already recited in claim 36 from which claim 41 depends.

10. Claim 43 is objected to because of the following informalities: "the poylmer" [claim 43, line 9] should be replaced with "the polymer". Appropriate correction is required.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

12. Claims 36 through 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Base claim 36 as amended recites the composition as being "at thermally curable at temperatures above the melting point of solder of the solder bump", which is merely a restatement of the composition being "thermally curable when the material of the solder bump is molten" as previously recited in the claim, but this feature of the composition is not described in the originally filed specification as previously noted by the examiner.

13. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

14. Claims 1 through 45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims still appear to be a literal translation into English from a foreign document, contain at least some grammatical and/or idiomatic informalities, are written in a run-on fashion, and are generally narrative and indefinite, thus failing to conform with current U.S. practice. The claims also still contain numerous multiple alternative limitations which render the intended scopes of the respective claims indefinite. The latter problem may be remedied in part (and in part only) by properly rewriting those limitations which lend themselves to a Markush format in proper Markush format (i.e., "is selected from the group consisting of..."). Problems of intended scope posed by other plural alternatives may be remedied by rewriting a claim containing the same as two or more separate claims which may or may not depend from each other.

As an example, the term "but insignificant" in claim 1 is a relative term which renders the claim indefinite. The term "but insignificant" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Thus, as used to qualify the reactivity of the crosslinking agent with the polymer at ambient temperature, this term renders the reactivity indeterminate and the claim and all claims depending therefrom indefinite. Claim 36 contains the same term and is similarly rendered indefinite thereby.

Also as an example only, the limitation "in presence of heat equal to or greater than a melting point of solder" in lines 12-13 of claim 1 is meaningless as written because it equates heat (having a caloric value) to a melting point (having a value in degrees of temperature). Claim 41 contains the same limitation and is similarly rendered indefinite thereby.

It is not clear what scope is encompassed by the limitation "according to any one of claim 1" [claim 12, line 1], since it appears that this limitation either contains a typographical error and/or words missing therefrom.

It is also not clear what is meant by the limitation "by *nominally SA spherical* ceramic beads or hollow spheres" [claim 29, lines 2-3]. First of all, acronyms such as "SA" should not be used in the claims, and second of all, the term "nominally" is a relative term which renders the claim indefinite because it is not defined by the claim and the specification fails to provide a standard for ascertaining the requisite degree. Thus one of ordinary skill in the art would not be apprised of the scope of the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, each of claims 30 and 31 recites the broad recitation "in the range from 0.1μm to 25μm" and the claim also recites "preferably 1μm to 15μm" which is the narrower statement of the range/limitation.

Similarly, also in the present instance, claim 39 recites the broad recitation "a die" and the claim also recites "in wafer form or as separate discrete devices" which is the narrower statement of the range/limitation.

The relative terms "scant" [claim 44, lines 16 and 17] and "copious" [claim 44, line 22] are not defined by the claim or the specification, thus rendering the claim indeterminate with regard to the scope of protection sought.

With regard to claim 45 as written, it is not clear to which element the term "its" in the next to the last line of the claim refers, thus rendering the claim indefinite with regard to the intended scope of protection sought. Recommend replacing indeterminate pronouns such as "it" or "its" with a direct recitation of the element(s) referred to thereby for improved clarity and readability.

The above is an indicative, but not necessarily an exhaustive, list of 35 U.S.C. 112, second paragraph, problems. Applicant is therefore advised to carefully review all of the claims for additional problems. Correction is required of all of the 35 U.S.C. 112, second paragraph problems, whether or not these were particularly pointed out above.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. As best can be understood in view of the indefiniteness of the claims, claims 1 through 45 are rejected under 35 U.S.C. 102(b) as being anticipated by Capote et al. ('403).

Capote et al. discloses a thermally curable compostion and method of making the same essentially as claimed. See columns 3 through 13 of the reference.

Conclusion

17. The additional prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The newly cited references disclose various adhesive compositions of interest and methods of making the same.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ljiljana (Lil) V. Ciric, whose telephone number is (703) 308-3925.

While she works a flexible schedule that varies from day to day and from week to week, Examiner Ciric

may generally be reached at the Office during the work week between the hours of 10 a.m. and 6 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel, can be reached on (703) 308-1272.

The NEW central official fax phone number is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.

lvc

May 29, 2004

LJILJANA V. CIRIC
PRIMARY EXAMINER
ART UNIT 3753

Attachment A to 09/673,992

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VIA FACSIMILE

Date: August 26, 2003

Facsimile Number: 703 746 4955
To: Ms. L. Ciric
Organization: USPTO Art Unit 3743
City: Arlington, VA

From: Fuess & Davidenas
Attorneys at Law
Central Office - 10951 Sorrento Valley Road Suite II-G
San Diego, CA 92121-1613

In Re: 1118-5-PCT/U
U.S. patent application serial number 09/673,992

No. of Pages Being Transmitted (excluding cover page): 8

Special Messages/Instructions: Please Deliver URGENT: Dear Ms. Ciric: Per our telephone call of this date, enclosed (in amendatory form) are the sixty-eight claims, now allowed, of U.S. patent application serial number 09/242,388, companion to U.S. patent application serial number 09/673,992 that you are examining. Please call with any questions. (Signed) W.C. Fuess

DO NOT ENTER

CLAIMS IN AMENDED FORM

1. (Twice Amended) A composition of matter comprising:

(a) a metal powder,

(b) a solder powder which melts at lower temperature than the metal powder,

(c) a polymer, or a monomer which is polymerisable to yield a polymer, said polymer being crosslinkable under the action of a chemical cross-linking agent,

(d) a cross-linking agent for said polymer, the cross-linking agent being selected from carboxylated polymers, polycarboxylic acids as such and polymer fatty acids [providing] so as to provide multiple reaction sites which lack chemical protection, the cross-linking agent having fluxing properties and being substantially nonreactive at said sites with said polymer without the application of heat and provision of a catalyst for reaction therebetween, the cross-linking agent[, as such,] not reacting with said polymer under storage conditions, and the cross-linking agent being capable of solvating,

(e) metallic oxide and metallic salt catalyst[s] which are formed by heating metallic components (a) and (b) and which promote a rapid cross-linking reaction between said polymer (e) and said cross-linking agent (d) when incorporated in said polymer, as a result of solvation of said catalyst by the cross-linking agent in the presence of heat, said composition being under storage conditions such that it does not possess a temperature sufficient for such solvating and crosslinking reaction to occur.

2. (Restated) A composition according to claim 1 wherein said metal powder is selected from Au, Ag, Cu, Zn, Al, Pd, Pt, Rh, Fe, Ni, Co, Mo, W, Be, and alloys thereof.

3. (Restated) A composition according to claim 2 wherein said metal powder is copper.

Attachment A

4. (Amended) A composition according to claim 1 wherein said solder powder is selected from Sn, Bi, Pb, Cd, Zn, Ga, In, Te, Hu, Sb, Tl and alloys thereof.

5. (Restated) A composition according to claim 1 wherein said solder powder is Sn63Pb37.

6. (Amended) A composition according to claim 1 wherein said cross-linking agent is selected from carboxylated polymers, dimer fatty acids and trimer fatty acids.

7. (Restated) A composition according to claim 6 wherein said cross-linking agent is a styrene-acrylic acid copolymer, and/or an organic trimer acid, having a functionality greater than 1.

8. (Amended) A composition according to claim 1 wherein said catalyst is formed by heating and oxidation of solder powder and dissolved by [the] a fluxing agent.

9. (Amended) A composition according to claim 8 wherein said catalyst is metallic oxide catalyst formed by heating and oxidation of tin and/or lead powder and dissolved by [the] a fluxing agent.

10. (Amended) A composition according to claim 1 wherein said catalyst is a metallic salt catalyst formed by heating and oxidation of tin and/or lead powder and dissolved by [the] a fluxing agent.

11. (Restated) A composition according to claim 10 wherein said catalyst is a tin salt catalyst formed by heating tin to form a tin oxide and reaction of the later with resin or solvent to produce a tin salt.

12. (Restated) A composition according to claim 10 wherein said catalyst is a copper salt catalyst formed by heating copper to form a copper oxide and reaction of the later with resin or solvent to

Attachment A

produce a tin salt.

13. (Amended) A composition according to claim 1 wherein an organic chelating agent is adhered to the metal powder as stability enhancer and the organic chelating agent is decomposes at solder melting temperature to provide decomposition products which dissolve in the fluxing agent as additional catalyst for the chemical cross-linking agent.

14. (Restated) A composition according to claim 13 wherein said organic chelating agent is an azole chelating agent.

15. (Restated) A composition according to claim 13 wherein said organic chelating agent is benzotriazole.

16. (Amended) A composition according to [any preceding] claim 1, further comprising a copper salt deactivator as a stability enhancer.

17. (Restated) A composition according to claim 16 wherein said copper salt deactivator is oxayl bis benzxylidene.

18. (Twice Amended) A composition for application to a dielectric substrate a predetermined pattern and comprising, in admixture

(i) a metallic powder component which includes (a) a solder powder and (b) a metal powder melting at a higher temperature than the solder powder,

(ii) a polycarboxyl compound effective as a fluxing agent for the metallic powder component at a first elevated temperature and as a cross-linking agent for an epoxy resin at a higher second temperature, the polycarboxyl compound being selected from carboxylated polymers, polycarboxylic acids as such and polymer fatty acids [so as to provide] providing multiple reaction sites which lack chemical protection, and

(iii) an epoxy resin, which composition is at a temperature below said first elevated temperature.

Attachment A

19. (Twice Amended) A composition comprising in admixture:

(i) a metallic powder component which includes (a) a solder powder and (b) a metal powder melting at a higher temperature than the solder powder;

(ii) a polycarboxyl compound effective as a fluxing agent for the metallic powder component at a first elevated temperature and as a cross-linking agent for an epoxy resin at a higher second temperature, the polycarboxyl compound being selected from carboxylated polymers, polycarboxylic acids as such and polymer fatty acids [so as to provide] providing multiple reaction sites which lack chemical protection, the composition being applied to a dielectric substrate to which an epoxy resin has been pre-applied, the composition thus applied being at a temperature below said first elevated temperature.

21. (Amended) A composition according to claim 19, wherein the epoxy resin is printed on the substrate in a predetermined pattern.

22. (Amended) A composition according to claim 18, wherein the polycarboxyl compound is thermally stable to 215°C and has an acid number greater than 200 and a viscosity less than 0.01 Pa.s (10 centipoise) at 200°C.

24. (Amended) A composition according to claim 18, wherein the polymer fatty acid is a dimer or trimer fatty acid.

25. (Amended) A composition according to claim 18, wherein the polycarboxyl carboxylated polymer is a styrene-acrylic acid copolymer.

26. (Amended) A composition according to claim 18, wherein the metal powder component contains up to 90% by weight of the metal powder (b) and from <100 to 10% by weight of the solder powder.

27. (Amended) A composition according to claim 18, wherein metal powder (b) is selected from Au, Ag, Cu, Zn, Al, Pd, Pt, Rh, Fe, Ni,

Attachment A

Co, Mo, W, Be, and alloys thereof.

28. (Amended) A composition according to claim 18, wherein solder powder is selected from Sn, Bi, Pb, Cd, Zn, Ga, In, Te, Hu, Sb, Tl and alloys thereof.

29. (Amended) A composition according to claim 18, wherein the solder powder includes a first metal and a second metal, the first metal having an affinity for the high melting point constituent, an oxide of the second metal being a catalyst for the curing of the epoxy resin and the first and second metals being melted together to form a metal film in which is embedded particles of the high melting point constituent while the first and second molten metals form a matrix on regions between the particles of the high melting point constituent, which matrix is rich in the second metal of the relatively low melting point constituent.

30. (Amended) A composition according to claim [29] 18, wherein the solder powder is a tin/lead alloy.

31. (Amended) A composition according to claim [29] 18, wherein the metal powder (b) is copper.

32. (Amended) A composition according to claim 18, wherein the chelation agent is benzotiazole.

33. (Second Amended) A composition according to claim 18[;], wherein the epoxy resin consists essentially of an epoxy resin that is liquid at ambient temperature.

34. (Second Amended) A composition according to claim 18[;], which contains, in percent by weight, from 5 to 50% in total of epoxy resin and polycarboxyl compound and 95 to 50% by weight the metallic powder component.

35. (Amended) A composition according to claim 18 wherein the

Attachment A

metal powder (b) is a copper powder which has been cleaned and coated with a stability enhancing copper deactivator which is a chelation agent for the copper and a high temperature catalyst for the crosslinking of the epoxy resin.

36. (Amended) A composition according to claim 35, wherein the chelation agent is an azole compound.

37. (Amended) A composition according to claim [35] 36 wherein the chelation agent is benzotriazole.

38. (Amended) A composition according to claim 18, wherein the metal powder (b) is a copper powder and the composition additionally includes anti-oxidant copper deactivating agent.

39. (Amended) A composition according to claim [38] 18, wherein metal powder is copper powder and the composition additionally includes oxalyl bis benzylidene hydrazine as the anti-oxidant copper deactivating agent.

57. (New) A composition according to claim 19, wherein the polycarboxyl compound is thermally stable to 215°C and has an acid number greater than 200 and a viscosity less than 0.01 Pas (10 centipoise) at 200°C.

58. (New) A composition according to claim 19, wherein the polymer fatty acid is a dimer or trimer fatty acid.

59. (New) A composition according to claim 19, wherein the carboxylated polymer is a styrene-acrylic acid copolymer.

60. (New) A con-position according to claim 19, wherein the metal powder component contains up to 90% by weight of metal powder (b) and from <100 to 10% by weight of the solder powder.

61. (New) A composition according to claim 19, wherein metal

Attachment A

powder (b) is a metal selected from Au, Ag, Cu, Zn, Al, Pd, Pt, Rh, Fe, Ni, Co, Mo, W, Be, and alloys thereof

62. (New) A composition according to claim 19, wherein the solder powder is selected from Sn, Bi, Pb, Cd, Zn, Ga, In, Te, Hu, Sb, Tl and alloys thereof

63. (New) A composition according to claim 19, wherein the solder powder is a tin/lead alloy.

64. (New) A composition according to claim 19, wherein the metal powder (b) is copper.

65. (New) A composition according to claim 19, wherein the metallic powder component has particles of a size less than 25 μm.

66. (New) A composition according to claim 19, wherein the metal powder (b) is copper powder and the composition additionally includes an anti-oxidant copper deactivating agent.

67. (New) A composition according to claim 19, wherein the metal powder is copper powder and the composition additionally includes oxalyl bis benzylidene hydrazine as an anti-oxidant copper deactivating agent.

68. (New) A composition of matter comprising:

a metal powder;

a solder powder;

wherein the metal powder and/or the solder powder under application of heat ultimately produce a catalyst;

a polymeric or a monomeric resin cross-linkable under the action of a cross-linking agent,

a polymeric cross-linking agent for said resin, the cross-linking

having fluxing properties, and

being by nature of its polymeric form unreactive with the

Attachment A

resin without heat and catalysis;

wherein the produced catalyst catalyzes cross-linking of the resin by the polymeric cross-linking agent; and

wherein the composition is self-catalyzing, the polymeric cross-linking agent producing on application of heat the catalyst that serves to catalyze the cross-linking of the resin.

Attachment A